6. *JUNCUS LEIOSPERMUS* VAR. *AHARTII* (AHART'S DWARF RUSH)

a. Description and Taxonomy

Taxonomy.—This taxon was first described in 1986 as *Juncus leiospermus* var. *ahartii* (Ertter 1986), although it had been recognized as unique more than 10 years earlier (L. Ahart *in litt.* 1986). The type locality is on the Ahart Ranch in Butte County, northeast of Honcut (Ertter 1986). Ahart's dwarf rush is a member of the rush family (Juncaceae) and is also known by the common name Ahart's rush (U.S. Fish and Wildlife Service 1996*b*).

Description and Identification.—*Juncus leiospermus* var. *ahartii* is a small, reddish, grass-like plant from 2 to 6 centimeters (0.8 to 2.4 inches) tall. Each plant may produce as many as 100 slender stems from its base, but the individual stems do not branch. The grass-like leaves arise from the base and are about half as long as the stems. Each stem produces only a single, tiny flower at its tip. The 6 to 10 petal-like parts per flower are not differentiated into sepals and petals but instead are all similar in appearance. They are lance-shaped, 2.4 to 3.6 millimeters (0.09 to 0.14 inch) long, and are maroon with a green or reddish stripe down the center. The flowers have two to five stamens with anthers greater than 0.7 millimeter (0.03 inch) long and a style 0.9 to 4 millimeters (0.04 to 0.16 inch) long. The fruit is a spherical or egg-shaped capsule 2.5 to 4.5 millimeters (0.10 to 0.18 inch) long, which contains many tiny, smooth seeds. The diploid chromosome number of *J. leiospermus* var. *ahartii* is 32 (Ertter 1986, Swab 1993).

The most closely related species, *Juncus leiospermus* var. *leiospermus* (Red Bluff dwarf rush), has several flowers clustered together. *J. uncialis* (inch-high dwarf rush) is similar to *J. leiospermus* var. *ahartii* in that it has only one flower per stem, but the former is less than 3.5 centimeters (1.4 inches) tall and has a shorter style and anthers. Other annual rushes have one or more of the following characteristics: thread-like stems, flowers in heads, shorter styles and anthers, or conspicuous ridges on the seeds (Ertter 1986, Swab 1993).

b. Historical and Current Distribution

Historical Distribution.—When it was named, *Juncus leiospermus* var. *ahartii* was known from four occurrences in two areas. Three of the four historical occurrences were on the Ahart Ranch in Butte County, where this species occurred in about 10 separate pools (**Figure II-28**). The fourth occurrence was near the town of Jenny Lind in Calaveras County (Ertter 1986). The Ahart Ranch is in the Northeastern Sacramento Valley Vernal Pool Region,

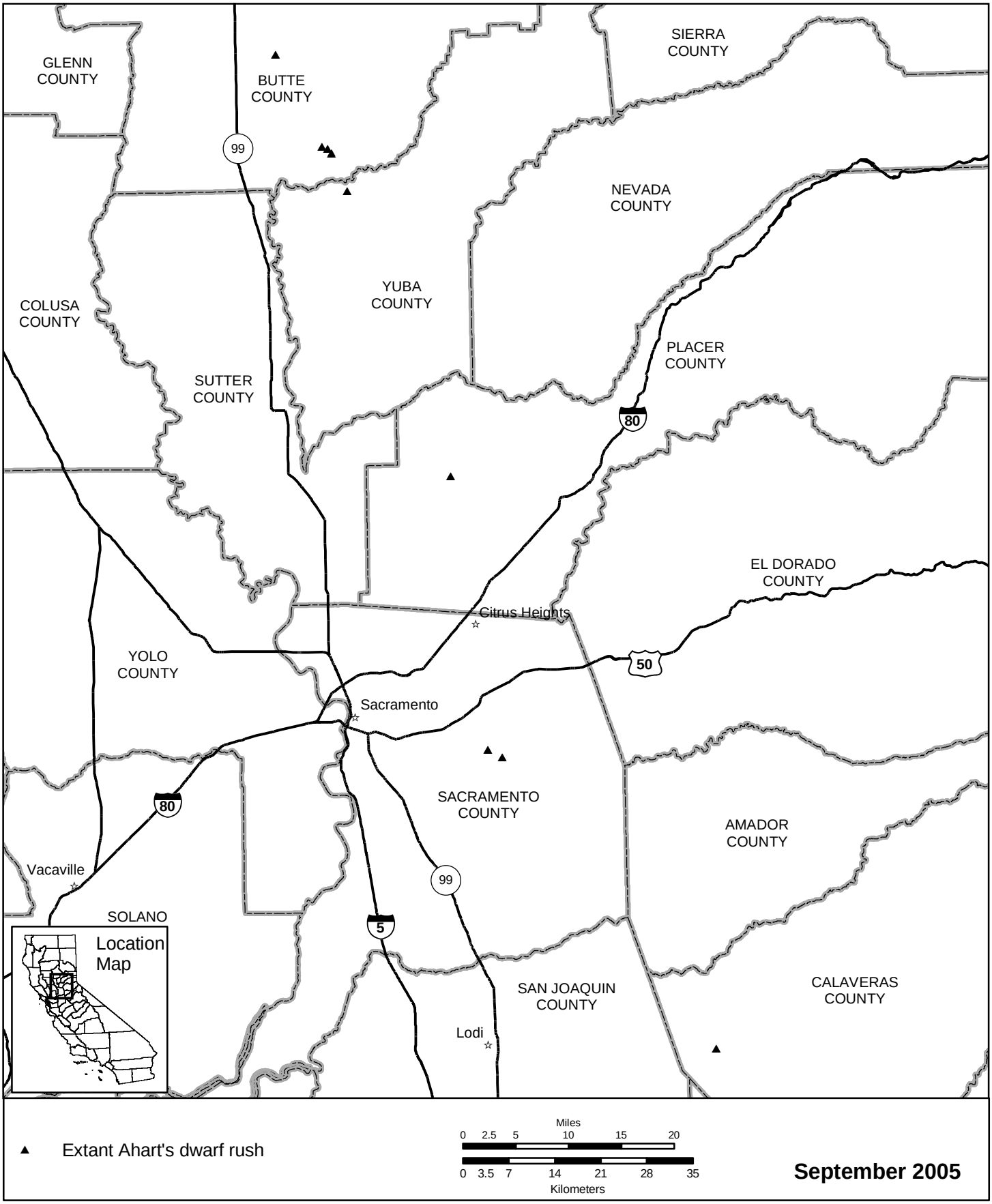

Figure II-28. Distribution of *Juncus leiospermus* var. *ahartii* (Ahart's dwarf rush).

and Jenny Lind is in the Southeastern Sacramento Valley Vernal Pool Region (Keeler-Wolf *et al.* 1998).

Current Distribution.—*Juncus leiospermus* var. *ahartii* is currently known to be extant from nine occurrences in Butte, Calaveras, Placer, Sacramento, Tehama, and Yuba Counties (California Natural Diversity Data Base 2005). This taxon is believed to remain extant on the Ahart Ranch and near Jenny Lind, although these sites have not been revisited since 1991. In addition, *Juncus leiospermus* var. *ahartii* has been found at the Oroville Municipal Airport in Butte County, near the Lincoln Airport in Placer County and in the Buffalo Creek area of Sacramento County (California Natural Diversity Data Base 2005). Thus, a total of nine occurrences are presumed to be extant and one is presumed to be extirpated in Sacramento County. All are in either the Northeastern Sacramento Valley or the Southeastern Sacramento Valley Vernal Pool Regions (Keeler-Wolf *et al.* 1998).

c. Life History and Habitat

Reproduction and Demography.—Very little information concerning *Juncus leiospermus* var. *ahartii* has been reported. It is an annual that flowers in April and May (L. Ahart *in litt.* 1986, California Natural Diversity Data Base 2001). Germination dates and conditions are unknown. *Juncus leiospermus* var. *ahartii* is wind-pollinated (Ertter 1986). In years of low rainfall, each plant typically has only a single stem. Moreover, larger populations have been observed in wet than in dry years (L. Ahart *in litt.* 1986).

Habitat and Community Associations.—*Juncus leiospermus* var. *ahartii* occurs in the Northern Basalt Flow, Northern Claypan, Northern Hardpan, and Northern Volcanic Mudflow vernal pool types (Sawyer and Keeler-Wolf 1995). The surrounding plant communities were not mentioned, except that the vernal pools at the type locality were in a grain field. Microhabitats from which the plants have been reported are the edges of vernal pools, bottoms of intermittent drainages, and on pocket gopher (*Thomomys* species) and ground squirrel (*Spermophilus* species) mounds (L. Ahart *in litt.* 1986, Ertter 1986, California Natural Diversity Data Base 2001). Soils underlying the pools typically are acidic clays (Ertter 1986). Known occurrences are at about 30 to 90 meters (100 to 300 feet) in elevation (California Natural Diversity Data Base 2001). The most frequent associate is *J. uncialis* (L. Ahart *in litt.* 1986, Ertter 1986, California Natural Diversity Data Base 2005).

d. Reasons for Decline and Threats to Survival

Most species addressed in this recovery plan are threatened by similar factors because they occupy the same vernal pool ecosystems. These general threats, faced by all the covered species, are discussed in greater detail in the Introduction section of this recovery plan. Additional, specific threats to *Juncus leiospermus* var. *ahartii* are described below.

Expansion of the runway at Oroville Municipal Airport destroyed part of the *Juncus leiospermus* var. *ahartii* population there (California Natural Diversity Data Base 2001). The type locality for *J. leiospermus* var. *ahartii* was dry-farmed in the 1970s. However, the disturbance created by plowing and the associated reduction in competing species apparently were beneficial to this taxon. Farming has since ceased in the area (L. Ahart *in litt.* 1986, Ertter 1986), but the response of *J. leiospermus* var. *ahartii* has not been determined. The Lincoln site has been degraded by off-road vehicle use, road construction, livestock grazing, and unspecified "disturbance" from adjacent developments (California Natural Diversity Data Base 2001). Other populations may have been destroyed before their discovery because much of the suitable habitat for *J. leiospermus* var. *ahartii* has been converted to agriculture and housing (Ertter 1986).

The Lincoln occurrence is on the site of a proposed housing development, which would destroy all of the occupied pools there (California Natural Diversity Data Base 2001). Random events coupled with small population size (Menges 1991) are a potential threat to 3 of the occurrences, which range in size from 45 to about 120 individuals (L. Ahart *in litt.* 1986, California Natural Diversity Data Base 2001).

e. Conservation Efforts

Juncus leiospermus var. *ahartii* was a Category 1 candidate for Federal listing even before it was officially named (U.S. Fish and Wildlife Service 1983b). However, in 1996 candidate status was withdrawn because insufficient information was available to propose the taxon for listing, and existing data suggested that it was not in danger of extinction throughout a significant portion of its range (U.S. Fish and Wildlife Service 1996*b*). *Juncus leiospermus* var. *ahartii* has no State status. The California Native Plant Society includes it on List 1B and considers it to be rare and of limited distribution, but not in danger of extinction (California Native Plant Society 2001). The only conservation measure implemented for this taxon to date was the establishment of a preserve near the Oroville Municipal Airport (California Natural Diversity Data Base 2005).